

REMARKS

Claims 12, 14-19, 21 and 24 are all the claims pending in the application.

I. The Restriction and Election of Species Requirements

The Examiner has examined all of claims 12, 14-19 and 21, making art rejections on claims 12 and 14-18. Further, the Examiner states in Paragraph 2 of the Office Action that once a restriction requirement has been withdrawn, the provisions of 35 U.S.C. § 121 no longer apply. Thus, it appears that the Examiner is withdrawing the election of species requirement. However, in the cover sheet of the Office Action (form PTO-326), the Examiner does not list claims 12 and 17 in the group of claims that are rejected.

In view of the above, Applicants request clarification of the status of the election of species requirement.

Applicants note that the Examiner has maintained the restriction requirement between method claim 24 and the coating material claims (pending claims 12, 14-19 and 21). However, Applicants request that claim 24 be "rejoined" when the Examiner allows the coating material claims. In general, if an applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims (including method of making the product and methods of using the product) which depend from or otherwise include all the limitations of the allowable product claim will be rejoined. See MPEP §821.04.

II. The Objections to Claims 14 and 15

Claims 14-15 are objected to under 37 C.F.R. 1.75(c), as allegedly being of improper dependent form for failing to further limit the subject matter of a previous claim.

Additionally, claim 14 is objected to for an "informality."

The Examiner states that claims 14-15 are no longer properly dependent upon claim 12 because claims 14 and 15 include formula (XXIV), but claim 12 does not provide antecedent basis for the subject matter of formula (XXIV).

The Examiner also notes that claims 14 and 15 only refer to a portion of claim 12, which the Examiner states is an improper form of dependency.

Additionally, claim 14 is objected to as containing extraneous text between formula (XXV) and (XXVI).

Claim 14 is rewritten in independent form, so as to not refer to claim 12. Additionally, claim 14 is amended to delete the extraneous text between formula (XXV) and (XXVI).

In view of the above, it is respectfully submitted that Applicants' claims 14 and 15 are clear and definite and it is requested that the objection to claims 14 and 15 be reconsidered and withdrawn.

III. The Objection to Claim 21

Claim 21 is objected to under 37 C.F.R. §1.75(c), as allegedly being of improper dependent form for failing to further limit the subject matter of a previous claim.

Similar to the Examiner's position with claim 14, the Examiner notes that claim 21 only refers to a portion of claim 12, which the Examiner states is an improper form of dependency.

Applicants have rewritten claim 21 in independent form, so as to not refer to claim 12.

In view of the above, it is respectfully submitted that Applicants' claim 21 is clear and definite and it is requested that the objection to claim 21 be reconsidered and withdrawn.

IV. The Rejection of Claim 15 Under 35 U.S.C. §112

Claim 15 is rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite.

The Examiner states that the language "may partially have one or more of" in the definitions of the linking groups for Y' is indefinite.

Claim 15 is amended for clarity. See also Applicants' specification, page 42, line 7-page 43, line 3.

For the above reasons, it is respectfully submitted that Applicants' claims are clear and definite and it is requested that the rejection under 35 U.S.C. §112 be reconsidered and withdrawn.

V. The Rejection of Claims 18 and 19 Under 35 U.S.C. §112

Claims 18-19 are rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite.

The Examiner questions what is meant by the term "functional" in the phrase "organic functional group."

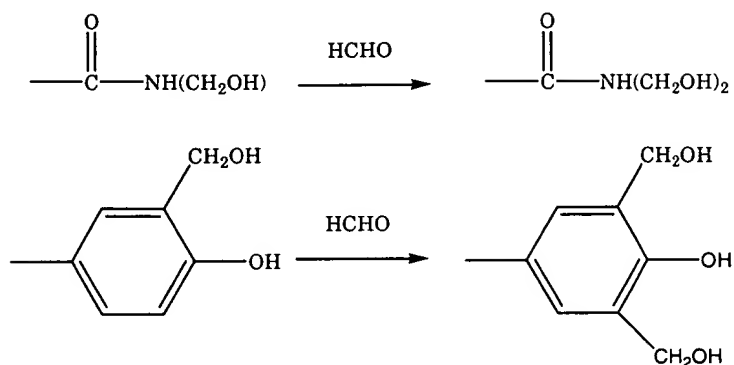
The Examiner also states that "every reaction groups except formalin would also be included as a possible B₁ group in claim 18."

Applicants have amended claim 18 to delete the term "functional".

Claim 19 is amended for clarity and is amended to be in independent form.

As to the moieties obtained by the reactions with formalin, formalin can be added to the hydrogen atom in an amide group and to the phenol group in the ortho-position to the hydroxyl group. The resulting methylol group (-CH₂OH) also acts as a crosslinkable group.

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For the above reasons, it is respectfully submitted that Applicants' claims are clear and definite and it is requested that the rejection under 35 U.S.C. §112 be reconsidered and withdrawn.

VI. The Art Rejections of Claims 14 and 15

Claims 14-15 are rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Mizutani et al (6,090,531).

Claims 14-15 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Teuscher (3,943,108).

Claims 14-15 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Unruh et al (2,716,103).

Claims 14-15 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Unruh et al (2,716,103).

Claims 14-15 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Unruh et al (2,716,097).

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Claims 12 and 14-17 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Watanabe et al (5,403,908).

Claims 12 and 14-17 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Machida et al '908.

Claims 12 and 14-18 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Machida et al '061.

Claims 12 and 16-17 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Yuki et al (4,473,690) in view of Morrison et al (Organic Chemistry).

The Examiner's position is that each of Mizutani et al, Teuscher, Unruh et al '103 and Unruh et al '097 teaches Applicants' claimed polymer of formula (XXIV).

Additionally, the Examiner's position is that Watanabe et al, Machida et al '908, Machida et al '061 and Yuki et al (together with Morrison et al (Organic Chemistry)) teach Applicants' claimed polymer of formula (XIII) and (XXVI).

Applicants respectfully submit that the present invention is not anticipated by or obvious over Mizutani et al, Teuscher, Unruh et al '103, Unruh et al '097, Watanabe et al, Machida et al '908, Machida et al '061 and Yuki et al (together with Morrison et al (Organic Chemistry)) and request that the Examiner reconsider and withdraw these rejections in view of the following remarks.

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First of all, in Mizutani et al the group corresponding to " Y' ", which is the moiety binding to the group corresponding to "-C(X₂)=", is a carbonyl group. To the contrary, claim 14, as amended, recites that Y' in Formulae (XXIV) represents -CO₂-E-, -CONH-E-, -O-E-, -CO-E- or -SO₂-E-, wherein E represents an aromatic ring group having from 6 to 14 carbon atoms.

Support for the term "thermal cross-linking agent" in claim 14 may be found in the specification as originally filed, for example, at page 59, lines 9-13.

None of the compositions disclosed in Teuscher et al, Unruh et al '103, Unruh et al '097, Watanabe et al and Machida et al contain a thermal crosslinking agent. Further, while the present invention relates to a bottom antireflective coat composition, each of Teuscher et al, Unruh et al (103), Unruh et al (097), Watanabe et al, Machida et al '908, Machida et al '061 and Yuki et al have a quite different use. Therefore, Applicants respectfully submit that none of these citations teaches or discloses Applicants' invention or the effect of the present invention as an antireflective coat layer.

For the above reasons, it is respectfully submitted that the subject matter of claims 12 and 14-18 is neither taught by nor made obvious from the disclosures of Mizutani et al, Teuscher, Unruh et al '103, Unruh et al '097, Watanabe et al, Machida et al '908, Machida et al '061 and Yuki et al (together with Morrison et al

(Organic Chemistry)) and it is requested that the rejections under 35 U.S.C. §102 be reconsidered and withdrawn.

VII. The Allowable Subject Matter

The Examiner states that claim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The Examiner also states that claim 19 would be allowable if rewritten to overcome the rejections under 35 U.S.C. §112, second paragraph, and to include all of the limitations of the base claim and any intervening claims as long as the limitation set forth does not take the scope of the polymers covered beyond that set forth in claim 18.

Applicants wish to thank the Examiner for the indication of allowable subject matter. Claims 19 and 21 have been rewritten in independent form.

VIII. Conclusion

In view of the above, Applicants respectfully submit that their claimed invention is allowable and ask that the objections to the claims, the rejections under 35 U.S.C. §112 and the rejections under 35 U.S.C. §§102 and 103 be reconsidered and withdrawn. Applicants respectfully submit that this case is in condition for allowance and allowance is respectfully solicited.

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If any points remain at issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the local exchange number listed below.

Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

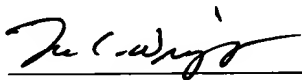
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Date: January 29, 2003

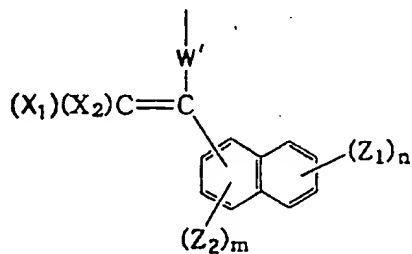
APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

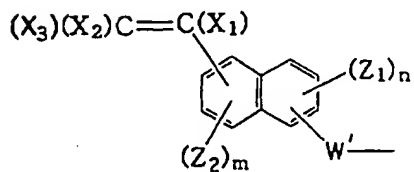
IN THE CLAIMS:

The claims are amended as follows:

12. (twice Amended) A bottom anti-reflective coating material composition comprising a polymer light absorbent having at least one group represented by the following formula (X), (XI), (XII), (XIII), (XIV) or (XV) on the side chain:



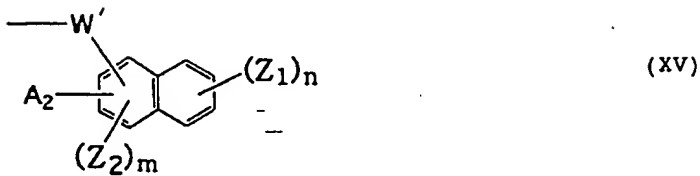
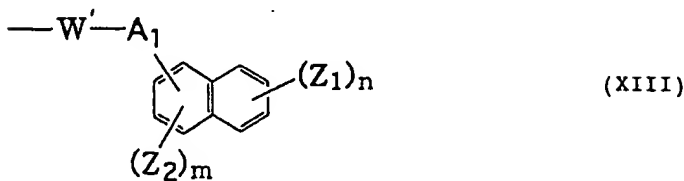
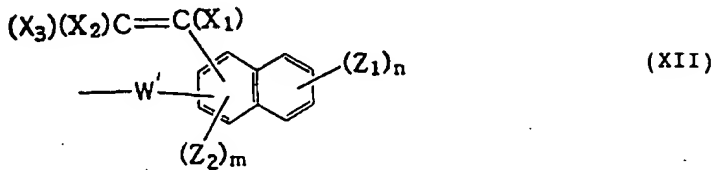
(X)



(XI)

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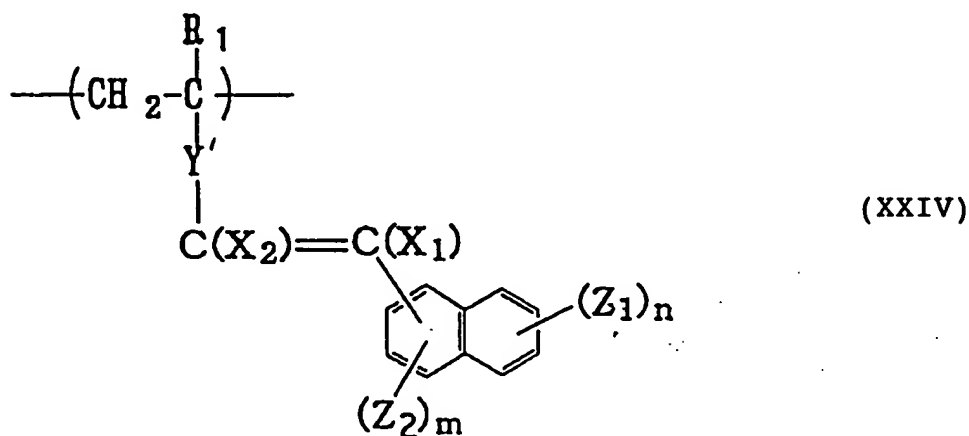
wherein W' represents a divalent linking group, X₁ to X₃, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group or -(X₄)_p-R wherein R represents an alkyl group having from 1 to 20 carbon atoms, an aryl group having from 6 to 20 carbon atoms or an aralkyl group having from 7 to 20 carbon atoms, which may have a substituent, X₄ represents a single bond, -CO₂-,

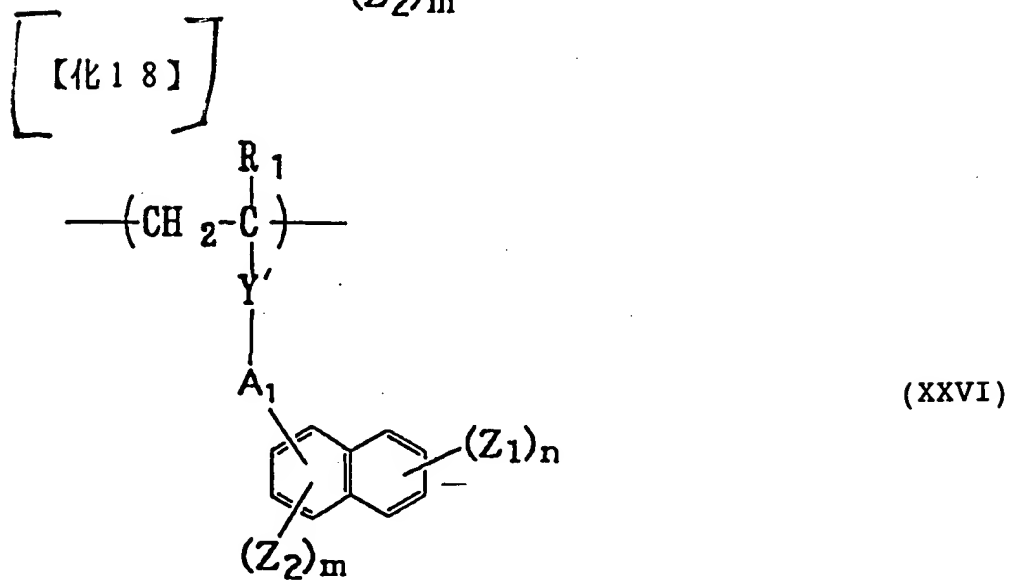
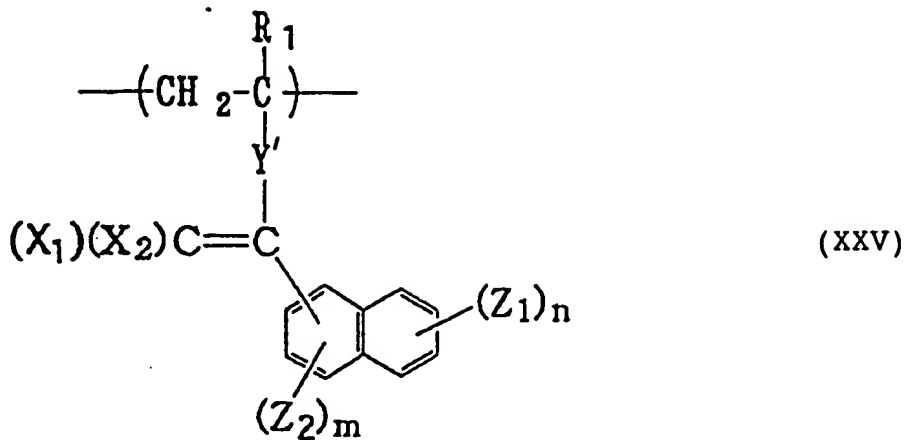
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-CONH-, -O-, -CO-, an alkylene group having from 2 to 4 carbon atoms or -SO₂-, p represents an integer of from 1 to 10, Z₁ and Z₂, which may be the same or different, each represents an electron donating group, m and n represent an integer of from 0 to 2 and from 0 to 3, respectively, and when m is 2 or m and n each is 2 or 3, the Z₁ groups or the Z₂ groups may be the same or different, A₁ represents a divalent aromatic ring or heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent, and A₂ represents an aromatic ring or heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent.

14 (Amended). A bottom anti-reflective coating material composition comprising:

a polymer light absorbent having at least one repeating structural unit represented by the following formula (XXIV), (XXV) or (XXVI) and
a thermal cross-linking agent:





wherein R¹ represents a hydrogen atom, a methyl group, a chlorine atom, a bromine atom or a cyano group, Y' in Formulae (XXV) and (XXVI) represents a divalent linking group and Y' in Formulae (XXIV) represents a -CO₂-E-, -CONH-E-, -O-E-, -CO-E- or -SO₂-E- group, wherein E represents an aromatic ring group having from

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6 to 14 carbon atoms, [X₁, X₂, Z₁, Z₂, m, n and A₁ each has the same meaning as in claim 12] X₁ and X₂, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group or -(X₄)_p-R wherein R represents an alkyl group having from 1 to 20 carbon atoms, an aryl group having from 6 to 20 carbon atoms or an aralkyl group having from 7 to 20 carbon atoms, which may have a substituent, X₄ represents a single bond, -CO₂-, -CONH-, -O-, -CO-, an alkylene group having from 2 to 4 carbon atoms or -SO₂-, p represents an integer of from 1 to 10, Z₁ and Z₂, which may be the same or different, each represents an electron donating group, m represents an integer of from 0 to 2, n represents an integer of from 0 to 3, and when m is 2 or m and n each is 2 or 3, the Z₁ groups or the Z₂ groups may be the same or different, A₁ represents a divalent aromatic ring or heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent.

15 (amended). A bottom anti-reflective coating material composition as claimed in claim 14, wherein Y' is a single bond, an alkylene, arylene or aralkylene group, which may have a substituent, [which may partially have one or more of -CO₂-, -CONH-, -O-, -CO- and -SO₂-, or] a group represented by -CO₂-E-, -CONH-E-, -O-E-, -CO-E- or -SO₂-E- [group], wherein E represents a single bond or an aromatic ring group having from 6 to 14 carbon atoms, which may have a substituent, an alkylene group having from 1 to 20 carbon atoms which may have a cyclic alkylene

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structure in the middle thereof, or a divalent group resulting from the combination of two or more of the above-described groups.

18 (amended). A bottom anti-reflective coating material composition as claimed in claim 12, wherein said polymer light absorbent contains from 2 to 50 wt% of the repeating structural unit represented by the following formula (XXVII):

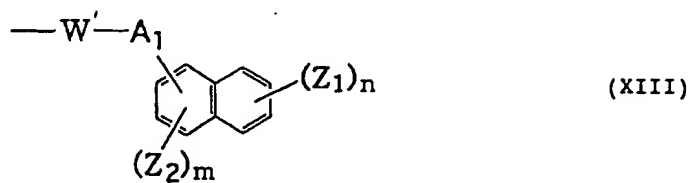
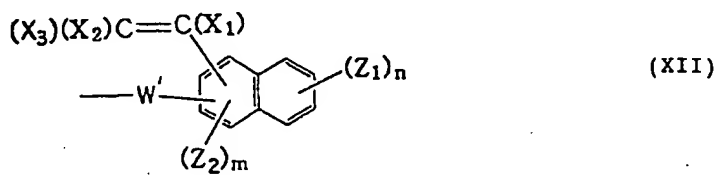
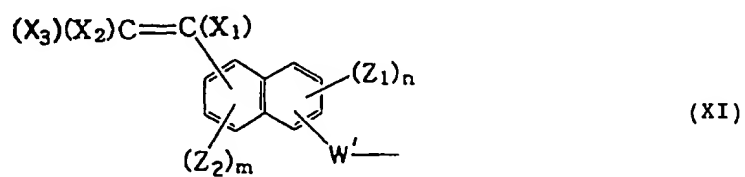
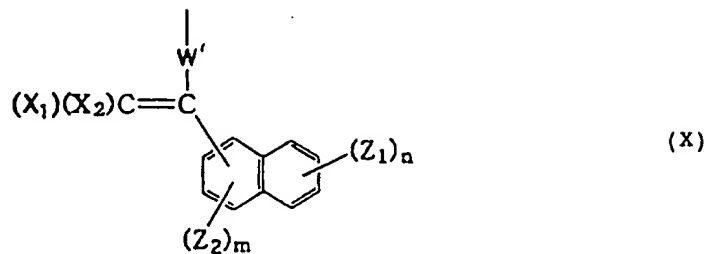


wherein [R²] R₂ represents a hydrogen atom, a methyl group, a chlorine atom, a bromine atom or a cyano group, and B₁ represents an organic [functional] group having -CH₂OH, -CH₂OR⁷ or -CH₂OCOCH₃ at the terminal wherein R⁷ represents a hydrocarbon group having from 1 to 20 carbon atoms.

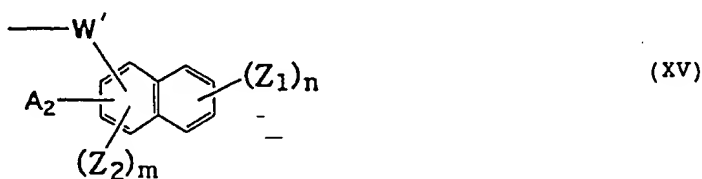
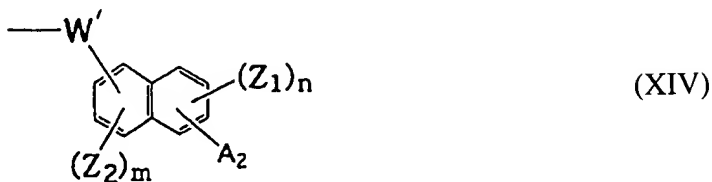
19 (twice amended). A bottom anti-reflective coating material composition [as claimed in claim 18] comprising the following components (a) and (b):

(a) a polymer light absorbent having at least one group represented by the following formula (X), (XI), (XII), (XIII), (XIV) or (XV) on the side chain:

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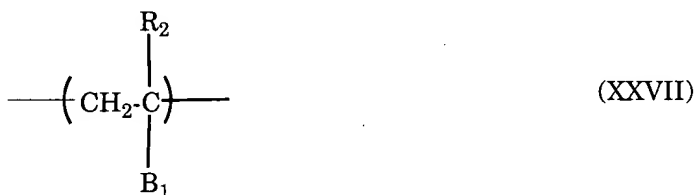
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wherein W' represents a divalent linking group, X₁ to X₃, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group or -(X₄)_p-R wherein R represents an alkyl group having from 1 to 20 carbon atoms, an aryl group having from 6 to 20 carbon atoms or an aralkyl group having from 7 to 20 carbon atoms, which may have a substituent, X₄ represents a single bond, -CO₂-, -CONH-, -O-, -CO-, an alkylene group having from 2 to 4 carbon atoms or -SO₂-, p represents an integer of from 1 to 10, Z₁ and Z₂, which may be the same or different, each represents an electron donating group, m and n represent an integer of from 0 to 2 and from 0 to 3, respectively, and when m is 2 or m and n each is 2 or 3, the Z₁ groups or the Z₂ groups may be the same or different, A₁ represents a divalent aromatic ring or heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent, and A₂ represents an aromatic ring or

heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent;

and having [wherein said polymer light absorbent contains] from 2 to 50 wt% of a repeating structural unit represented by formula (XXVII): [of claim 18]



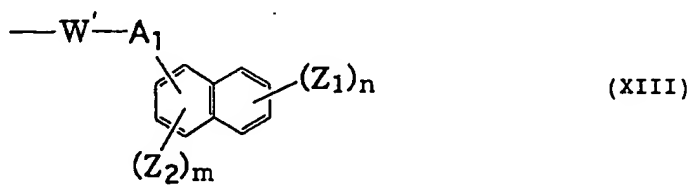
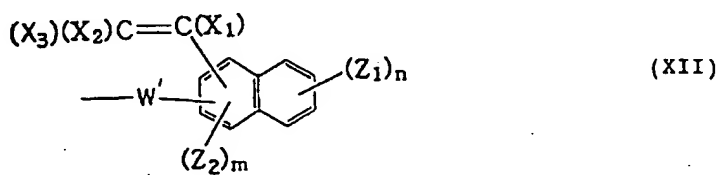
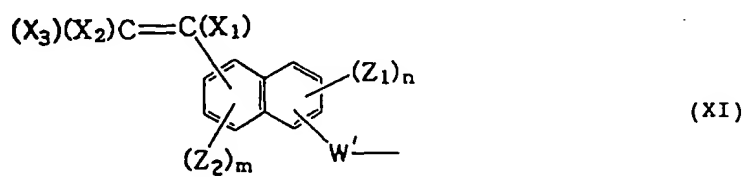
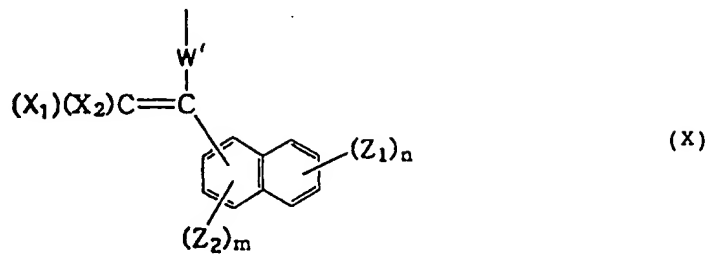
where R₂ represents a hydrogen atom, a methyl group, a chlorine atom, a bromine atom or a cyano group, and B₁ is a group obtained by the reaction of a group represented by -CONHCH₂OH, -CONHCH₂OCH₃, -CH₂OCOCH₃, -C₆H₄(OH)CH₂OH, -C₆H₄(OH)CH₂OCH₃ or -CONHC(CH₃)₂CH₂COCH₃, with formalin.

21 (amended). A bottom anti-reflective coating material composition comprising the following components (a) and (b):

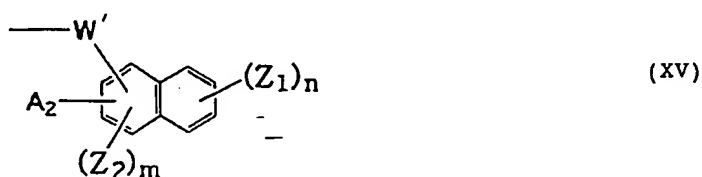
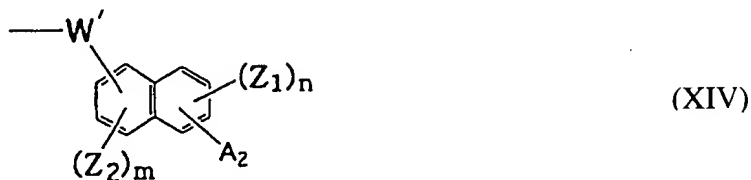
(a) a polymer light absorbent [claimed in claim 12] having at least one group represented by the following formula (X), (XI), (XII), (XIII), (XIV) or (XV) on the side chain:

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wherein W' represents a divalent linking group, X_1 to X_3 , which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group or $-(X_4)_p-R$ wherein R represents an alkyl group having from 1 to 20 carbon atoms, an aryl group having from 6 to 20 carbon atoms or an aralkyl group having from 7 to 20 carbon atoms, which may have a substituent, X_4 represents a single bond, $-CO_2-$, $-CONH-$, $-O-$, $-CO-$, an alkylene group having from 2 to 4 carbon atoms or $-SO_2-$, p represents an integer of from 1 to 10, Z_1 and Z_2 , which may be the same or different, each represents an electron donating group, m and n represent an integer of from 0 to 2 and from 0 to 3, respectively, and when m is 2 or m and n each is 2 or 3, the Z_1 groups or the Z_2 groups may be the same or different, A_1 represents a divalent aromatic ring or heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent, and A_2 represents an aromatic ring or

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heteroaromatic ring group having from 5 to 14 carbon atoms, which may have a substituent; and

(b) a melamine, guanamine, glycoluril or urea compound substituted by at least one substituent selected from a methylol group, an alkoxymethyl group and an acyloxymethyl group.